NOTIFICATION OF ADDENDUM

ADDENDUM NO. 1

DATED 6/02/2004

Control	**0528-01-077, ETC.**
Project	**NH 2004(442), ETC.**
Highway	**SH 107**
County	**HIDALGO**

Ladies/Gentlemen:

Attached please find an addendum on the above captioned project. Included in the attachment is an adendum notification which details the changes and the respective proposal pages which were added and/ or changed.

Except for new bid insert pages, it is unnecessary to return any of the pages attached.

Bid insert pages must be returned with the bid proposal submitted to the Department, unless your firm is submitting a bid using a computer print out. The computer print out must be changed to reflect the new bid item information.

Contractors and material suppliers, etc. who have previously been furnished informational proposals are not being furnished a copy of the addendum. If you have a subcontractor on the above project, please advise them of this addendum. Acknowledgment of this addendum is not requested if your company has been issued a proposal stamped “This Proposal Issued for Informational Purposes.”

You are required to acknowledge receipt of this addendum by entering the date, which appears at the top of this letter on the Addendum Acknowledgement Form, contained in your bid proposal.

Failure to Acknowledge receipt of this addendum in your bid proposal will result in your bid not being read.

04/99

SUBJECT: PLANS AND PROPOSAL ADDENDUMS
PROJECT: NH 2004(442) CONTROL: 0528-01-077
COUNTY: HIDALGO
LETTING: 06/09/2004
REFERENCE NO: 0528

PROPOSAL ADDENDUMS

_ PROPOSAL COVER
X BID INSERTS (SH. NO.: 6-15, 7-15, 8-15, 11-15, 12-15, 15-15)
X GENERAL NOTES (SH. NO.: U through DD (PLAN SHEETS 12J-N))
X SPEC LIST (SH. NO.: 4-5, 5-5)
_ SPECIAL PROVISIONS:
ADDED:

DELETED:

X SPECIAL SPECIFICATIONS:
ADDED: 6955, 8288

DELETED:

X OTHER: PLAN SHEETS

DESCRIPTION OF ABOVE CHANGES
(INCLUDING PLANS SHEET CHANGES)

BID INSERTS-
****

REVISED QUANTITY FOR THE FOLLOWING ITEMS: 618-0511, 618-0514, 618-0545, 620-0503, 620-0510, 624-0501, 625-0502, 628-0832, 656-0518, 656-0543, 682-0502, 682-0505, 682-0509, 684-0505, 684-0507, 684-0544, 686-0504, 686-0507, 688-0501, 688-0511, 1619-0501, 8230-0501

ADDED THE FOLLOWING BID ITEMS: 618-0535, 680-0502, 684-0502, 6955-0501, 8288-0504

REMOVED THE FOLLOWING BID ITEM: 680-0501

BID INSERTS 6-15, 7-15, 8-15, 11-15, 12-15, AND 15-15 CHANGED AS A RESULT OF THE ABOVE QUANTITY CHANGES.

SPEC LIST-
****

ADDED SPECIAL SPECIFICATION 6955
DESCRIPTION OF ABOVE CHANGES (CONTINUED)
(INCLUDING PLANS SHEET CHANGES)

ADDED SPECIAL SPECIFICATION 8288

SPEC LIST SHEETS 4-5 AND 5-5 CHANGED AS A RESULT OF THE ABOVE SPEC LIST CHANGES.

GENERAL NOTES-
****

ADDED NOTES FOR ITEM 680 AND ADDED ITEM 8288 NOTES.

PLAN SHEETS-
****

SHEETS 12J-N: THESE GENERAL NOTES SHEETS WERE REVISED AND SHIFTED WITH THE ADDITION OF NEW NOTES FOR ITEMS 680 AND 8288.

SHEETS 20, 20A-C: THESE E&Q SHEETS WERE REVISED TO REFLECT THE NEW AND REVISED QUANTITIES.

SHEET 161: REMOVED SIGNAL PHASING DIAGRAM.

SHEET 162: REMOVED SIGNAL TIMING CHART.

ADDED SHEETS 162A-J: ADDED SHEETS FOR NEW TRAFFIC SIGNAL AT WAL-MART ENTRANCE.

SHEET 164: REMOVED SIGNAL PHASING DIAGRAM.

SHEET 165: REMOVED SIGNAL TIMING CHART.

SHEET 167: REMOVED SIGNAL PHASING DIAGRAM.

SHEET 168: REMOVED SIGNAL TIMING CHART.

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	100	0502		PREP ROW DOLLARS and CENTS	STA	89.000	1
	100	0510		PREP ROW (CHANNEL) DOLLARS and CENTS	STA	1.500	2
	104	0509		REMOV CONC (SDWLK) DOLLARS and CENTS	SY	681.000	3
	104	0511		REMOV CONC (DRVWY) DOLLARS and CENTS	SY	2,873.000	4
	104	0513		REMOV CONC (CURB & GUTTER) DOLLARS and CENTS	LF	1,054.000	5
	110	0501	004	EXCAVATION (RDWY) DOLLARS and CENTS	CY	75,243.000	6
	132	0509		EMBANK (DENS CONT)(TY C)(CL 3) DOLLARS and CENTS	CY	3,063.000	7
	164	0523	006	CELL FIB SEED (TEMP)(WARM) DOLLARS and CENTS	SY	10,945.000	8
	164	0549	006	CELL FIB SEED (PERM)(URBAN)(CLAY) DOLLARS and CENTS	SY	10,945.000	9
	168	0501		VEGETATIVE WATERING DOLLARS and CENTS	MG	115.000	10
	204	0503		SPRINKLING (DUST CONTROL) DOLLARS and CENTS	MG	356.000	11

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
1	247	0699	018	FL BS (RDWY DEL)(TY D GR6 CL 4) DOLLARS and CENTS	CY	16,164.000	12
	251	0538		REWRKING BS MATL (DC)(TY B CL 5)(10") DOLLARS and CENTS	CY	20,878.000	13
	260	0515	001	LIME TREAT SUBGR (DC)(12") DOLLARS and CENTS	SY	78,980.000	14
	260	0517	001	LIME (TY A(SLRY),TY B OR TY C(SLRY) DOLLARS and CENTS	TON	1,215.000	15
1	262	0518		LIME (TY A(SLRY),TY B OR TY C(SLRY) DOLLARS and CENTS	TON	1,251.000	16
1	262	0567		LIME TRT FOR BS CRS (NEW/EXT BS)(DC)16" DOLLARS and CENTS	SY	83,515.000	17
	310	0501		ASPH MATRL (MC-30) DOLLARS and CENTS	GAL	16,704.000	18
	316	0501	004	ASPH (AC-10) DOLLARS and CENTS	GAL	24,124.000	19
	316	0526	004	AGGR (TY PB, GR 4)(MOD) DOLLARS and CENTS	CY	672.000	20
	354	0512	007	PLANE ASPH CONC PAV (0" TO 1 1/2 ") DOLLARS and CENTS	SY	1,088.000	21
	354	0529	007	PLANE ASPH CONC PAV (0" TO 2") DOLLARS and CENTS	SY	6,821.000	22

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	400	0507	027	CEM STABIL BKFL DOLLARS and CENTS	CY	3,188.000	23
	400	0508	027	CUT & RESTORING PAV DOLLARS and CENTS	SY	339.000	24
	400	0516	027	STRUCT EXCAV (SPECIAL) DOLLARS and CENTS	CY	1,217.000	25
	402	0501		TRENCH EXCAV PROTECTION DOLLARS and CENTS	LF	5,998.000	26
	432	0501		RIPRAP (CONC)(CL B) DOLLARS and CENTS	CY	10.000	27
	464	0503	003	RC PIPE (CL III)(18 ") DOLLARS and CENTS	LF	1,918.000	28
	464	0505	003	RC PIPE (CL III)(24 ") DOLLARS and CENTS	LF	471.000	29
	464	0509	003	RC PIPE (CL III)(36 IN) DOLLARS and CENTS	LF	577.000	30
	464	0510	003	RC PIPE (CL III)(42 IN) DOLLARS and CENTS	LF	494.000	31
	464	0511	003	RC PIPE (CL III)(48 IN) DOLLARS and CENTS	LF	1,014.000	32
	464	0512	003	RC PIPE (CL III)(54 IN) DOLLARS and CENTS	LF	893.000	33

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	464	0513	003	RC PIPE (CL III)(60 IN) DOLLARS and CENTS	LF	710.000	34
	464	0526	003	RC PIPE (CL IV)(60 IN) DOLLARS and CENTS	LF	1,465.000	35
	464	0528	003	RC PIPE (CL IV)(72 IN) DOLLARS and CENTS	LF	1,201.000	36
	465	0503		INLET (COMPL)(TY C) DOLLARS and CENTS	EA	3.000	37
	465	0506		INLET (COMPL)(TY F) DOLLARS and CENTS	EA	33.000	38
	465	0526		MANH (COMPL)(TY M) DOLLARS and CENTS	EA	1.000	39
	465	0540		INLET EXT DOLLARS and CENTS	EA	14.000	40
	465	0578		INLET (COMPL)(TY CC) DOLLARS and CENTS	EA	2.000	41
	496	0504		REMOV OLD STR (PIPE) DOLLARS and CENTS	LF	5,505.000	42
	496	0517		REMOV OLD STR (SMALL)(INLET) DOLLARS and CENTS	EA	21.000	43
	500	0501		MOBILIZATION DOLLARS and CENTS	LS	1.000	44

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	502	0501	027	BARRICADES, SIGNS AND TRAF HANDLE DOLLARS and CENTS	MO	12.000	45
	508	0503		CONSTRUCT DETOURS (CL 3) DOLLARS and CENTS	SY	1,560.000	46
	512	0554	001	PORT CONC TRAF BARRIER (LOW PROF)(TY E) DOLLARS and CENTS	LF	5,440.000	47
	512	0555	001	PORT CONC TRAF BARRIER (LOW PROF)(TY G) DOLLARS and CENTS	LF	6,300.000	48
	512	0556	001	PORT CONC TRAF BARRIER (LOW PROF)(TY H) DOLLARS and CENTS	LF	5,440.000	49
	529	0516		CONC CURB AND GUTTER (TY A)(BARRIER) DOLLARS and CENTS	LF	12,354.000	50
	529	0552		CONC CURB AND GUTTER (TY B)(MOUNT-ABLE) DOLLARS and CENTS	LF	2,945.000	51
	529	0553		CONC GUTTER (TY A)(4 FT) DOLLARS and CENTS	LF	496.000	52
	530	0501	012	DRVWYS (CONC)(6 ") DOLLARS and CENTS	SY	1,940.000	53

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	530	0541	012	DRVWYS (ASPH-CONC PAV)(TY PRB-1) DOLLARS and CENTS	SY	3,921.000	54
	530	0545	012	TURNOUTS (ASPH-CONC PAV)(TY PRB1) DOLLARS and CENTS	SY	1,387.000	55
	531	0502	018	CONCRETE SIDEWALKS DOLLARS and CENTS	SY	5,604.000	56
	536	0503		CONC DIRECT ISLAND DOLLARS and CENTS	SY	6,713.000	57
	618	0511	013	CONDUIT (PVC)(SCHD 40)(2 ") DOLLARS and CENTS	LF	4,173.000	58
	618	0514	013	CONDUIT (PVC)(SCHD 40)(4 ") DOLLARS and CENTS	LF	1,507.000	59
	618	0532	013	CONDUIT (PVC)(SCHD 40)(2 ")(BORE) DOLLARS and CENTS	LF	247.000	60
	618	0535	013	CONDUIT (PVC)(SCHD 40)(4 ")(BORE) DOLLARS and CENTS	LF	210.000	61
	618	0545	013	CONDUIT (PVC)(SCHD 40)(1 ") DOLLARS and CENTS	LF	224.000	62
	620	0503		ELEC CONDUCTOR (NO. 8) BARE DOLLARS and CENTS	LF	1,353.000	63
	620	0504		ELEC CONDUCTOR (NO. 6) BARE DOLLARS and CENTS	LF	37.000	64

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	620	0510		ELEC CONDUCTOR (NO. 6) INSULATED DOLLARS and CENTS	LF	159.000	65
	624	0501	011	GROUND BOX TY A (122311) W/APRON DOLLARS and CENTS	EA	45.000	66
	624	0506	011	GROUND BOX TY A (122311) DOLLARS and CENTS	EA	24.000	67
	625	0502	004	ZINC-COAT STL WIRE STRAND (3/8 IN) DOLLARS and CENTS	LF	3,635.000	68
	628	0832		ELE SRV TY T(120/240)000 (NS)GS(L)TS(O) DOLLARS and CENTS	EA	3.000	69
	644	0614		SM RD SGN ASSM TY 10BWG(1)SA(P) DOLLARS and CENTS	EA	117.000	70
	644	0618		SM RD SGN ASSM TY 10BWG(1)SA(T) DOLLARS and CENTS	EA	18.000	71
	644	0619		SM RD SGN ASSM TY 10BWG(1)SA(U) DOLLARS and CENTS	EA	1.000	72
	644	0635		SM RD SGN ASSM TY S80(1)SA(U) DOLLARS and CENTS	EA	14.000	73
	644	0636		SM RD SGN ASSM TY S80(1)SA(U-1EXT) DOLLARS and CENTS	EA	1.000	74
	644	0639		SM RD SGN ASSM TY S80(1)SA(U-WC) DOLLARS and CENTS	EA	4.000	75

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	649	0502	002	REMOV SMALL RDSD SGN ASSMS DOLLARS and CENTS	EA	132.000	76
	656	0510		FND FOR TRAF SIG (24 IN DRIL SHFT) DOLLARS and CENTS	LF	12.000	77
	656	0518	011	TRAF SIG CNTRL FND DOLLARS and CENTS	CY	3.300	78
	656	0543	011	FND FOR TRAF SIG (TY B)(36IN DR SH) DOLLARS and CENTS	LF	182.000	79
	662	0501	008	WRK ZN PAV MRK REMOV (W) (4") (SLD) DOLLARS and CENTS	LF	2,100.000	80
	662	0502	008	WRK ZN PAV MRK REMOV (W) (4") (BRK) DOLLARS and CENTS	LF	458.000	81
	662	0523	008	WRK ZN PAV MRK REMOV (Y) (4") (SLD) DOLLARS and CENTS	LF	1,870.000	82
	662	0542	008	WRK ZN PAV MRK REMOV (CL B) TY I-C DOLLARS and CENTS	EA	569.000	83
	662	0549	008	WRK ZN PAV MRK NON-REMOV (W) (4") (SLD) DOLLARS and CENTS	LF	27,650.000	84
	662	0550	008	WRK ZN PAV MRK NON-REMOV (W) (4") (BRK) DOLLARS and CENTS	LF	5,688.000	85

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	662	0551	008	WRK ZN PAV MRK NON-REMOV (W) (4") (DOT) DOLLARS and CENTS	LF	1,120.000	86
	662	0555	008	WRK ZN PAV MRK NON-REMOV (W) (12")(SLD) DOLLARS and CENTS	LF	210.000	87
	662	0569	008	WRK ZN PAV MRK NON-REMOV (Y) (4")(SLD) DOLLARS and CENTS	LF	30,620.000	88
	662	0581	008	WRK ZN PAV MRK SH TRM (TAB) TY W DOLLARS and CENTS	EA	20,001.000	89
	662	0583	008	WRK ZN PAV MRK SH TRM (TAB) TY Y-2 DOLLARS and CENTS	EA	1,080.000	90
	666	0501	043	REFL PAV MRK TY I (W) (4") (SLD) DOLLARS and CENTS	LF	3,573.000	91
	666	0502	043	REFL PAV MRK TY I (W) (4") (BRK) DOLLARS and CENTS	LF	6,420.000	92
	666	0506	043	REFL PAV MRK TY I (W) (8") (SLD) DOLLARS and CENTS	LF	19,886.000	93
	666	0508	043	REFL PAV MRK TY I (W) (8") (LNDP) DOLLARS and CENTS	LF	455.000	94
	666	0509	043	REFL PAV MRK TY I (W) (12") (SLD) DOLLARS and CENTS	LF	2,589.000	95

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	666	0512	043	REFL PAV MRK TY I (W) (24") (SLD) DOLLARS and CENTS	LF	1,244.000	96
	666	0513	043	REFL PAV MRK TY I (W) (ARROW) DOLLARS and CENTS	EA	51.000	97
	666	0517	043	REFL PAV MRK TY I (W) (WORD) DOLLARS and CENTS	EA	49.000	98
	666	0521	043	REFL PAV MRK TY I (W) (RR XING) DOLLARS and CENTS	EA	4.000	99
	666	0524	043	REFL PAV MRK TY I (Y) (4") (SLD) DOLLARS and CENTS	LF	9,000.000	100
	666	0525	043	REFL PAV MRK TY I (Y) (4") (BRK) DOLLARS and CENTS	LF	240.000	101
	666	0532	043	REFL PAV MRK TY I (Y) (24") (SLD) DOLLARS and CENTS	LF	773.000	102
	666	0608	043	REFL PAV MRK TY I (W) (8") (DOT) DOLLARS and CENTS	LF	122.000	103
	666	0609	043	REFL PAV MRK TY I (W) (BIKE) (ARROW) DOLLARS and CENTS	EA	25.000	104
	666	0611	043	REFL PAV MRK TY I (W) (BIKE) (SYMBOL) DOLLARS and CENTS	EA	50.000	105
	672	0506	012	RAIS PAV MRKR CL B (REFL) TY I-A DOLLARS and CENTS	EA	64.000	106

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	672	0507	012	RAIS PAV MRKR CL B (REFL) TY I-C DOLLARS and CENTS	EA	162.000	107
	672	0509	012	RAIS PAV MRKR CL B (REFL) TY II-A-A DOLLARS and CENTS	EA	347.000	108
	672	0510	012	RAIS PAV MRKR CL B (REFL) TY II-C-R DOLLARS and CENTS	EA	1,031.000	109
	677	0501		ELIM EXT PAV MRK & MRKR (4") DOLLARS and CENTS	LF	9,025.000	110
	677	0503		ELIM EXT PAV MRK & MRKR (8") DOLLARS and CENTS	LF	5,660.000	111
	677	0507		ELIM EXT PAV MRK & MRKR (ARROW) DOLLARS and CENTS	EA	27.000	112
	677	0508		ELIM EXT PAV MRK & MRKR (WORD) DOLLARS and CENTS	EA	11.000	113
	680	0502	007	INSTAL OF HWY TRAF SIG (SYSTEM) DOLLARS and CENTS	EA	4.000	114
	682	0502		VEH SIG SEC (12 IN) DOLLARS and CENTS	EA	147.000	115
	682	0505		PED SIG SEC (2 INDICATIONS IN 1 SEC) DOLLARS and CENTS	EA	28.000	116
	682	0509		BACK PLATE (3 SEC)(12 IN) DOLLARS and CENTS	EA	24.000	117

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	682	0511		BACK PLATE (5 SEC)(12 IN) DOLLARS and CENTS	EA	2.000	118
	684	0502		TRAF SIG CBL (TY A)(2 CONDR)(12 AWG) DOLLARS and CENTS	LF	315.000	119
	684	0505		TRAF SIG CBL (TY A)(5 CONDR)(12 AWG) DOLLARS and CENTS	LF	6,601.000	120
	684	0507		TRAF SIG CBL (TY A)(7 CONDR)(12 AWG) DOLLARS and CENTS	LF	3,315.000	121
	684	0544		TRAF SIG CBL (TY C)(2 CONDR)(14 AWG) DOLLARS and CENTS	LF	11,597.000	122
	684	0559		TRAF SIG CBL (TY A)(6 PAIR)(19 AWG) DOLLARS and CENTS	LF	622.000	123
	686	0504	003	TRAF SIG POLE ASM (STL)STR(TY D)(34FT) DOLLARS and CENTS	EA	6.000	124
	686	0507	003	TRAF SIG POLE ASM (STL)STR(TY D)34’LUM DOLLARS and CENTS	EA	7.000	125
	688	0501		PED DETECT (PUSH BTN) DOLLARS and CENTS	EA	28.000	126
	688	0511		VEH DETECT (SAWCUT) DOLLARS and CENTS	LF	8,814.000	127
	1201	0501		12 IN LED TRF SIGNAL LAMP (RED BALL) DOLLARS and CENTS	EA	35.000	128

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	1619	0501		TRAY CABLE (3 COND)(12 AWG) DOLLARS and CENTS	LF	1,531.000	129
	3146	0805	017	HOT MIX (TY D)(PG 76-22) DOLLARS and CENTS	TON	15,931.000	130
	3637	0501		LAPTOP MICROCOMPUTER DOLLARS and CENTS	EA	1.000	131
	3637	0502		PRINTER DOLLARS and CENTS	EA	1.000	132
	3637	0503		INTERNET SERVICE PROVIDER DOLLARS and CENTS	EA	1.000	133
	5005	0522		ROCK FILTER DAMS (TY 3) DOLLARS and CENTS	CY	22.000	134
	5005	0523		ROCK FILTER DAMS (REMOV & REPLAC)(TY 3) DOLLARS and CENTS	CY	22.000	135
	5007	0501		BALED HAY FOR EROSN & SEDMT CONT DOLLARS and CENTS	EA	28.000	136
	5007	0502		BL HAY FOR ERSN & SED CONT (RMV & REPL) DOLLARS and CENTS	EA	18.000	137
	5007	0503		BALED HAY FOR EROSN & SED CONT (REMOV) DOLLARS and CENTS	EA	28.000	138

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	5010	0504		CONSTRUCT EXIT (TY 2) DOLLARS and CENTS	SY	144.000	139
	5010	0505		CONSTRUCT EXIT (REMOV & REPLAC)(TY 2) DOLLARS and CENTS	SY	144.000	140
	5010	0506		CONSTRUCT EXIT (REMOV)(TY 2) DOLLARS and CENTS	SY	144.000	141
	5012	0502		FRNT END LDR WORK (EROSN CONT)(CL 1) DOLLARS and CENTS	HR	16.000	142
	5249	0501		TEMP SEDMT CONT FENCE DOLLARS and CENTS	LF	1,400.000	143
	5249	0502		TEMP SEDMT CONT FENCE (REMOVE & REPLAC) DOLLARS and CENTS	LF	770.000	144
	5249	0503		TEMP SEDMT CONT FENCE (REMOV) DOLLARS and CENTS	LF	1,400.000	145
	5866	0501		CURB RAMP AND LANDING (TY 1) DOLLARS and CENTS	EA	18.000	146
	5866	0502		CURB RAMP AND LANDING (TY 2) DOLLARS and CENTS	EA	10.000	147
	5866	0506		CURB RAMP AND LANDING (TY 7) DOLLARS and CENTS	EA	19.000	148

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	6009	0501		RDSD FLASH BEACON ASSEM DOLLARS and CENTS	EA	2.000	149
	6010	0501		SALV TRAF SIGNALS DOLLARS and CENTS	EA	3.000	150
	6955	0501		12 INCH LED TRAF SIGNAL LAMP (RED) DOLLARS and CENTS	EA	8.000	151
	8230	0501	001	LED PED SIG LAMP(SYMB)(2 IND/1 SEC) DOLLARS and CENTS	EA	28.000	152
	8288	0504		COAXIAL CABLE DOLLARS and CENTS	LF	55.000	153
				ALTERNATE NO. 1A DOLLARS and CENTS			
	247	0817	018	FL BS (COMPL IN PLAC)(TY A GR1 CL 4) DOLLARS and CENTS	CY	16,164.000	154
	262	0518		LIME (TY A(SLRY),TY B OR TY C(SLRY) DOLLARS and CENTS	TON	705.000	155
	262	0537		LIME TRT FOR BS CRSE(EXT BS)(DC)(VAR) DOLLARS and CENTS	SY	83,515.000	156

Union Pacific Railroad Company
Protection of Fiber Optic Cable Systems

Fiber optic cable systems may be buried on the Railroad's property. Protection of the fiber optic cable systems is of extreme importance since any break could disrupt service to users resulting in business interruption and loss of revenue and profits. The State and/or its Contractor shall telephone the Railroad during normal business hours (7:00 A.M. to 9:00 P.M., central time, Monday through Friday, except holidays) at 1-800-336-9193 (also a 24-hour, seven-day number for emergency calls) to determine if fiber optic cable is buried on the Railroad's premises to be used by the State. If it is, the State and/or its Contractor will telephone the telecommunications company(ies) involved, arrange for a cable locator and make arrangements for relocation or other protection of the fiber optic cable prior to beginning any work on the Railroad's premises.

The following standard detail sheets have been modified:

DRIVEWAY DETAILS (MOD)
TURNOUT DETAILS (MOD)

Where the Department has acquired additional Right of Way for this project, which results in the perimeter of an existing quarry, or materials pit to be located 200 ft. or less from the edge of the nearest travel lane, the safety treatment of the pit or quarry shall be addressed in accordance with the plans or as required by H.B. 451 Legislation. Any necessary treatment shall be addressed and paid for under special specification Item, "pit and quarry treatment". The Contractor will be responsible for informing the Department of any such pits not identified in the plans, which are encountered during construction.

The schedule for this project shall be prepared by the Critical Path Method (CPM) format. The Contractor shall be responsible for maintaining an accurate vertical and horizontal control throughout the contract.

Upon the request of the Engineer, the Contractor shall furnish to the Engineer a typed narrative report, signed and dated by the Contractor, outlining the manner of prosecution of work that he intends to follow in subsequent thirty-day period.

The Contractor shall provide on a weekly basis a list of equipment, including idle equipment, utilized on the project that week.

The Contractor shall contact the local power companies prior to commencing construction. The Contractor shall coordinate with the power companies for the raising/relocation of power lines where deemed necessary by the Engineer or the Contractor to effect the proposed construction (subsidiary to the various bid Items).

Erection of poles, luminaries, and structures located near any overhead or underground utilities shall be accomplished using established industry and utility safety practices. The Contractor shall consult with the appropriate utility companies prior to beginning such work.

The Contractor's attention is directed to the possible presence of underground utilities on the Right of Way on this project. It is the responsibility of the Contractor to call for locates 48 hours in the advance of excavation or drilling.

The Contractor shall take extreme care when excavating or drilling in the vicinity of utilities.

The Contractor shall coordinate the clearing and grubbing, excavation and removal and replacement of culverts/structures along the outfall channels with any utility companies whose facilities are encountered.

The Contractor shall make every effort to preserve existing trees designated by the Engineer to remain following construction. The Contractor is required to follow the TXDOT's pruning guidelines and observe recognized tree surgery practices. Additionally, care shall be taken to minimize disruption or damage to the root system of these designed trees.

The Contractor shall furnish the Highway Advisor Radio (HAR) system and FCC license to provide updated radio messages. The Contractor shall be responsible for updating messages weekly and informing the general public of upcoming work or detours. TXDOT will provide two large blue signs and the Contractor will install them. The work will be subsidiary to various bid Items.

The Contractor shall coordinate with Hidalgo County Irrigation District No. 1 for the construction of modifications to the existing irrigation lines as shown in the plans. The Contractor shall provide two weeks notice to Hidalgo County Irrigation District No. 1 prior to the anticipated date of construction of each modification. The Contractor is hereby notified that Hidalgo County Irrigation District No. 1 retains the right to delay said construction for seven days and the Contractor shall not be entitled to additional compensation for such delay. Construction of each modification shall be completed within 48 hours.

ITEM 5. Control of the Work

To ensure accurate measurement for final pay quantities and to facilitate the Engineer's check on the Contractor's survey work, the Contractor shall be required to set construction stakes based on plan stations and at 100 ft. Maximum intervals or as directed by the Engineer.

ITEM 6. Control of Materials

The Contractor will be required to furnish the area Engineer the maximum gross weights, including loads, for all vehicles, including trucks, truck-tractors, trailers, semi-trailers or any combination of such vehicles used to deliver materials to the project. Maximum gross weights are to be determined in accordance with Item 6, Article 6.7 of the Standard Specifications.

ITEM 100. Preparing Right of Way

Unless otherwise authorized by the Engineer, all obstructions, objectionable material and concrete shall be disposed of by hauling it to disposal sites arranged for by the Contractor and satisfactory to the Engineer.

Pruning: All trees within the limits of the contract and at the Right of Way line shall be pruned by the Contractor to the satisfaction of the Engineer. Pruning shall be done in accordance with accepted pruning practices as set forth by the National Arborist Association in pruning standards for shade trees (current edition). Dead or damaged limbs on trees, including sucker-growth on trunks of trees, are to be removed. Such removed vegetative material shall become the property of the Contractor and shall be removed from the site in a manner acceptable to the Engineer. Unless otherwise noted on the plans, pruning shall be accomplished once during the term of this contract, at dates specified in the plans or as directed by the Engineer.

In accordance with Migratory Bird Treaty Act, during the months of March 1st thru September 1st, the Contractor shall conduct a survey to determine if nests are present within the ROW. If migratory bird nests are found, the Contractor shall not disturb the nesting area until the young have fledged. Pruning, mowing, or any activities that can disturb the nests shall not be conducted until after September 1st or birds have fledged.

Transplanting of existing palm trees will be subsidiary to Item 100, and in accordance with Item 192.

ITEM 110. Excavation

Prior to contract letting, earthwork cross sections will be available at the area Engineer's office for review by the prospective bidders.

ITEM 132. Embankment

The percent of density, as determined by Test Method Tex-113-E, shall be a minimum of 95 percent. Density tolerances will be permitted.

The Contractor's attention is called to the fact that the following note for this Item applies to any material used for embankment other than, that which was excavated from the roadway.

The securing of embankment material by the excavation of ditches for beneficial drainage purposes, the removal of spoil banks, and the removal of hills for land leveling within 200 feet of any public road will be permitted, provided that selection criteria is met.
Embankment (DENS CONT) shall be Type C with a max. PI of 40. Borrow used as embankment material in the top two feet below the bottom of Flexible Base shall meet the following requirements based on preliminary tests and such other tests found necessary by the Engineer.

1. The material shall be such as to produce a well-bonded embankment and shall have a minimum PI of 8 and a maximum PI of 30.

The Contractor's attention is called to the fact that the preliminary test will require approximately 15 days and it is the Contractor's responsibility to advise the Engineer of the location of the source sufficiently in advance to avoid delay.

ITEM 164. Seeding for Erosion Control

Cellulose fiber mulch seeding shall be applied in areas designated on the plans or as directed by the Engineer. Prior to seeding, the areas designated shall be finished to a smooth surface for a uniform application of seed.

Seeding shall be accomplished by the Hydromulch method in two applications as shown below:

1st application –
Grass seed and fertilizer
2nd application –
Cellulose Fiber Mulch shall be applied according to the
Rate shown in the Standard Specification Book.

Reseeding

Areas requiring reseeding due to the non-establishment of sufficient vegetative cover, shall be reseeded in accordance with Items 164 and 168. The cost for reseeding shall be paid for by the State provided that the Contractor has followed the seeding and watering requirements as specified in Items 164 and 168.

Seed mixture

Seed mixture shall be as specified under Item 164.

Cool season or warm season grasses shall be included as part of Item 164 (See Table 4A or 5 in the Standard Specification Manual for dates and seed type).

ITEM 166. FERTILIZER

Areas to receive fertilizer are the same as shown for Item 164.

Fertilizer rate is based on a rate of 100 Lbs. of Nitrogen per acre. The Nitrogen-Phosphorous-Potassium (NPK) ratio shall include a minimum of 5 percent phosphorous and 5 percent Potassium. Fertilizer shall be homogenized.

This item will not be paid for directly but will be subsidiary to Item 164 “Seeding for Erosion Control.”

ITEM 168. Vegetative Watering

Water shall be applied uniformly over areas after seeding or sodding as directed by the Engineer in accordance with applicable provisions of Item 168, "Vegetative Watering". In addition, the Contractor shall be responsible for a 70% grass coverage in order to comply with stabilization requirements. Vegetative coverage shall be uniform. During this period, water equipment shall be metered and operated under pumping pressure capable of delivering the required quantities of water necessary. Each cycle shall be executed every two (2) days, or as directed by the Engineer. Water shall be applied in such a manner as to ensure adequate moisture and be maintained on the grass seeding and not erode the soil in place. During periods of adequate moisture as determined by the Engineer, mechanical watering may not be required. In addition to metering the water equipment, the Contractor shall upon request of the Engineer, provide a logbook showing daily water usage and receipts of water applied.

Upon establishment of 70% vegetative coverage as determined by the Engineer, the Engineer shall have the option to require the Contractor to continue watering as specified for a period not to exceed 30 days.

The basis of the estimate below establishes the approximate quantity of water required completing one (1) full watering cycle:

*Grass Areas	Gallons/Acre	Acre	Total Gallons (Minimum)
	3394	2.26	7671

ITEM 247. Flexible Base

Flexible Base Type D will be composed of caliche (argillaceous Limestone, calcareous or calcareous clay particles) and may contain stone, conglomerate, gravel, sand or granular materials when these materials are in situ with the caliche.

Flexible Base TY D GR 6 (caliche base) does not meet the requirements of TY A GR 1 base material.

Blended material for Flexible Base TY D GR 6

The Contractor may blend base material with another caliche source or with crushed concrete, provided a minimum of 50% caliche is used. The crushed concrete may contain sand or granular materials. Stabilizing additives will not be allowed in the raw crushed concrete base. Acceptance will be under the following conditions:

Condition One (1): When both components of the blend in their individual stockpiles meet all the physical requirements of this Item, then field blending will be allowed.

Condition Two (2): When only one component of the blend passes the physical requirements of this Item, the materials shall be blended through a plant for stockpile testing and approval.

Flexible Base (TY D GR 6) shall conform to the following requirements:

BEFORE LIME IS ADDED

Retained on Sq. Sieve	Percent Retained
2”	0
½”	20-60
No. 4	40-75
No. 40	70-90
Max. PI:	15
Max. Wet Ball PI:	15
Wet Ball Mill Max Amount:	50
Min. Comp. Strength PSI:	150 at 15 psi lateral pressure

The Wet Ball Test (Tex-116-E) shall be run and the Plasticity Index of the material passing the No. 40 sieve shall be determined (Wet Ball PI).

After 1% lime (laboratory) is added to unlimed material

Max PI	12
Min. Comp. Strength PSI:	180 at 15 psi Lateral Pressure
Triaxial Test (Lime Treated)	Tex-121-E

Two (2) percent lime (by weight) will be incorporated into the Flexible Base in the field at the State's expense in accordance with the provisions of Items 262 and 264.

The percent of density as determined by Compaction Ratio (Tex-113-E) for the new Flexible Base shall be a minimum of 98%. Density, gradation and PI tolerances will be permitted.

Samples for testing the material for soil constants, gradation and wet ball mill shall be taken from production or stockpile as directed by the Engineer.

The Contractor's attention is called to the fact that certain existing and/or proposed structures may be within the limits of the Flexible Base. It shall be the Contractor's responsibility to perform construction operations without damage to these structures.

ITEM 251. Reworking Base Material

Quantities of Flexible Base to be salvaged, shown on the typical sections, are for estimating purposes only. All acceptable base material encountered in existing base is to be salvaged as directed by the Engineer regardless of the quantities involved.

Salvaged base shall be used in the bottom course on any of the proposed roadway and/or turnout sections. The salvaged Flexible Base shall be laid to a compacted thickness that will allow a minimum cover of 4 inches of new Flexible Base on the proposed roadway and/or turnout sections.

Salvaged base may be used on any of the proposed driveway sections.

ITEM 260. Lime Treatment for Materials Used as Subgrade

The Contractor's attention is called to the fact that certain existing and/or proposed structures are within the limits of the lime-treated Subgrade. Unless otherwise directed by the Engineer, these structures shall be installed before the final rolling of this Subgrade. It shall be the Contractor's responsibility to perform the proper lime treating operation without damage to these structures.

Soft spots in the Subgrade are to receive lime stabilization as directed by the Engineer. Adding, mixing, etc., Of the lime for soft spots will not be paid for directly, but shall be considered subsidiary to the bid Item, "Lime Treatment for Materials Used as Subgrade".

ITEMS 260-262. Lime Treatment for Materials Used as Subgrade and Lime Treatment for Base Courses

The slurry method of applying lime will be required, except when the lime is to be added to naturally wet materials as directed by the Engineer.

For this project, the Engineer will direct a random number of lime trucks to be check weighed.

The minimum seven-day curing period and the minimum two-day requirement before opening to traffic shall not apply to this project. The lime treated material shall be kept moist until the treated material is sealed or covered by other material.

ITEM 262. Lime Treatment for Base Courses

A lime spreader box will not be required if lime can be distributed without it, at a uniform rate, to the satisfaction of the Engineer.

ITEM 301. Asphalt Antistripping Agents

Lime TY A or B shall be added as an Antistripping additive between the rates of 1 % minimum – 1.5% maximum by weight. If TEX-531-C cannot be met within these limits, Liquid Antistripping agents as approved by the Engineer may be used in conjunction with lime, at the maximum allowable lime content, in order to meet the specified requirement.

If the Contractor elects to use lime slurry, a pug mill will be used to ensure thorough mixing of the lime and aggregates.

Moisture susceptibility testing will be required.

ITEM 302. Aggregate for Surface Treatments

This project will require a Minimum Aggregate Classification of "A".

The aggregate for the surface treatment shall be surface dry before application unless otherwise directed by the Engineer.

ITEM 310. Prime Coat (Cutback Asphaltic Material)

The Contractor shall exercise diligence in the application of asphalt by the use of flagging and rolling procedures to keep from spraying or splattering the traveling public with asphaltic material.

All existing Flexible Base, which may become exposed by the planing operation, shall be primed at the rate of 0.2 Gal/SY.

ITEM 316. Surface Treatments

In addition to cleaning by brooming of paved surfaces to be sealed as required by this Item, blading may also be necessary to clean dirt and grass from edges of the pavement and/or turnout areas. The cost of this blading will not be paid for directly, but will be considered subsidiary to the various bid Items of the project.

When applying surface treatment at railroad crossings, a strip of paper shall be placed over the rail and flange areas across the pavement.

The rates of application and the estimated quantities of aggregate are based on the usual or average gradation of known materials. Prior to shipping aggregate to the project, the Contractor shall furnish the Engineer with samples of the proposed aggregate, which is intended to be used so that the gradation may be determined and rate of application changed if necessary.

Surface treatments with unheated aggregate shall not be applied when the air temperature is below 70 degrees F and is falling but it may be applied when the air temperature is above 60 degrees F and is rising. Asphaltic material may be placed by preheating aggregate to 280 degrees F when the air temperature is 70 degrees F and falling or when the air temperature is 50 degrees F and rising.

To minimize windshield damage, sealed sections of roadways and all paved surfaces adjacent to sealed sections shall be broomed and cleaned of surplus aggregate before opening to traffic. All surfaces sealed during a working day and adjacent paved surfaces will be broomed before the end of the day as directed by the Engineer. This brooming shall be subsidiary to this bid Item.

The type and grade of asphalt as shown on the plans and/or as directed by the Engineer, shall be used on these projects. Asphalt cement will be used during the warm season (usually April 15th to September 15th). An emulsified asphalt will be used during the cooler season (usually September 15th to April 15th), if permitted in writing by the Engineer. The emulsified asphalt, if used, shall be HFRS-2. Estimated quantities shown for the bid Item is based on an average of the estimated rates of application for asphaltic cement and emulsified asphalt. These rates should be used for estimating and comparison purposes only.

The one or two-course surface treatment shall be in place for a sufficient period of time in the opinion of the Engineer, for the surface treatment to properly dry and cure before placing the Asphaltic Concrete Pavement.

Traffic will not be permitted on the surface treatment unless authorized by the Engineer.

ITEM 400. Excavation and Backfill for Structures

(Designers are to estimate gravel bedding (item 400 struct excav (special)) for any proposed pipe deeper than 10-feet. Always include a minimum of 200-cubic yards for projects with culverts or storm drain systems.)

Cement stabilized backfill shall contain aggregate, water and a minimum of 2 sacks of Portland cement per cubic yard of material. Cement and water shall conform to the requirements of Item 421, "Portland Cement Concrete". Aggregate shall be clean sand or other suitable material and shall be subject to the approval of the Engineer.

Aggregate shall be clean sand or other suitable material and shall be subject to the approval of the Engineer.

If the Contractor elects to cut pavement (existing/detour) for structural work beyond that required by the construction phasing shown in the plans and approved by the Engineer, it shall be restored at his expense and backfilled to its original condition or better in accordance with Item 400.

ITEM 416. Drilled Shaft Foundations

The Contractor’s attention is directed to the possible presence of underground utilities on the Right of Way on this project. It is the responsibility of the Contractor to call for locates 48 hours in the advance of excavation or drilling.

ITEM 421. Portland cement Concrete

Transverse construction joints for box culverts and/or box siphons will be allowed at changes of grade and/or alignment. These joints will be required at intervals not greater than 60 feet nor less than 40 feet, unless otherwise approved by the Engineer.

Class "A" Concrete used in the structural application within the limits of the paved roadway, will require a minimum of one (1) set of beams per each day of production.

Type II Cement will be required for the following concrete elements:

(1) Abutment caps, backwalls and wingwalls;
(2) Columns, footings and tie beams;
(3) Piling and drilled shafts;
(4) Retaining wall footings and any row of MSE panels in contact with natural soil;

(5) Gravity, soil nail and drill shaft retaining walls;
(6) Box culverts; and
(7) Box siphons.

The Contractor shall provide equipment for concrete batch plant inspection for determining the free moisture and/or absorption of aggregates in accordance with applicable TXDOT Test Methods and this specification for use by the Contractor during production and for verification by the Engineer.

The Contractor shall provide for the Department's use one (1) laptop computer system for concrete batch plant inspection and shall be subsidiary to the various bid Items.
The following software and hardware listed below or approved equal or better shall be provided:

Software: 1 ea. MS-DOS, 1 ea. Windows 98, 1 ea. Excel and 1 ea. Antivirus Software. All software shall be the most current version available on the market or what TxDOT is currently using.

Hardware: 1 ea. Pentium II 400 MHz w/512k cache, 64 Mb ram, 4.3 Gigabyte hard drive, 24x CD ROM, 56k v.90 Fax Modem, 3.5 inch 1.44 Mb floppy drive, HP 812c Inkjet printer or equivalent and all incidentals necessary for hardware connections and operations of the system.

The Contractor shall deliver the specified software and hardware to be used by the Department prior to the commencement of any work on the project. The Contractor shall provide carrying cases for both the laptop computer and printer. The Contractor shall purchase and provide to the Department updates to the software as required to remain compatible with TxDOT's currently used software. In the case of needed repairs for the software or hardware, the Contractor shall provide a backup computer system meeting the same Specifications within twenty-four (24) hours. At the completion of the project, the Contractor shall retain all hardware and software.

ITEM 432. Riprap

All concrete riprap, except concrete that is used on safety end treatments, shall be 4" thick unless otherwise shown on the plans.

ITEM 464. Reinforced Concrete Pipe

Tongue and groove pipe will be required for installations where part of the structure may protrude into the Lime Treated Subgrade. The 4-foot depth restriction for heavy equipment passage over pipe structures is voided. The Contractor will be responsible for any construction damage to these facilities.

The 4-foot depth restriction for heavy equipment passage over pipe structures is voided. The Contractor will be responsible for any construction damage to these facilities. The Contractor shall use rubber-gasket pipe unless otherwise noted.

Cold Applied, Plastic Asphalt Sewer Joint Compound may be used on this project.

ITEM 471. Frames, Grates, Rings and Covers

All grates will be tack welded to the frames in a manner satisfactory to the Engineer.

All manholes located on paved surfaces will be constructed with a cover of the type that will enable it to be bolted to the ring.

ITEM 502. Barricades, Signs and Traffic Handling

The Traffic Control Plan for this project shall be as shown in the plans, as detailed on the "Barricade and Construction Standard" Sheets and as provided for in the "Texas Manual on Uniform Traffic Control Devices".

Shadow vehicles equipped with Truck-Mounted Attenuators are required, as shown on Traffic Control Plan (TCP) standards. The Contractor shall provide to the Engineer a letter certifying that all Truck-Mounted Attenuators (TMA) used on this project that were purchased on or after October 1, 1998, have been found to be crashworthy using the criteria outlined in the National Cooperative Highway Research Program (NCHRP) Report 350. If the TMA was purchased prior to October 1, 1998, a letter certifying crashworthiness using the criteria outlined in either NCHRP Reports 230 or 350 shall be provided to the Engineer.

The Contractor shall replace/relocate all regulatory signs removed due to construction operations with a same sign on fixed support(s) immediately upon its removal. The Contractor will first obtain project Engineer approval before removing any regulatory roadway sign. Required flaggers are to be available to direct traffic during sign intermediate down time.

The Contractor shall also be required to relocate any Directional Sign Assemblies removed during construction operations immediately upon their removal.

These signs shall be relocated to a location in accordance with the Latest Version of the “Texas Manual on Uniform Traffic Control Devices”. In no case will a sign be removed without a replaceable sign and support(s) being readily available and a location established. Removal and relocation of these signs required for traffic control will not be paid for directly, but shall be considered subsidiary to Item 502.

The Contractor's attention is called to the "No Center Stripe" sign and other signs in the "Traffic Control Details for Seal Coat Operations" which are included in the plans. These signs are to be furnished and installed by the Contractor and shall remain in place after completion of the surface treatment operation until standard pavement markings are placed but no longer than 3 days. These signs are in addition to the signs and barricades that may be required on sheets BC (1) thru (12)-03.

Plastic drums shall be used in accordance with the plans and manufacturer's recommendations as approved by the Engineer.

All work involved including loading, hauling, unloading, placing, moving and resetting, storing, furnishing of materials other than the concrete median barriers, for all preparation, including modifying the median barrier ends, for reasonable repair of damaged sections, erection, maintaining, removing and returning the median barriers and all labor and tools required for utilization of the concrete median barriers in conjunction with the Traffic Control Plan will not be paid for directly, but shall be considered subsidiary to Item 502.

During the various construction phases, the Contractor shall provide drainage slots in every fourth (min) temporary concrete traffic barrier used for traffic control in order to handle temporary drainage. Any additional measures needed will be as directed by the Engineer.

ITEM 504. Facilities for Field Office and Laboratory

The Contractor shall furnish one air-conditioned Field Office (TY E) at a location satisfactory to the Engineer. This building shall not be less than 8 feet by 16 feet and 8 feet high or an approved equivalent and shall not have less than four glass windows and one door. A workbench and a table, each 3 feet wide and 6 feet long, shall be provided. In addition, the Contractor shall provide a cellular phone and indoor plumbing facilities.

The Contractor shall furnish 120-240 volt single-phase electricity to the field office. The Contractor shall pay for the electricity and sewer installation service charges.

Electricity and plumbing provided to the field office needs to be connected within 30 days of beginning work.

The Contractor will furnish a Type D Structure (Asphalt Mix Laboratory) for the Engineer, meeting the requirements of Item 504. The Contractor is responsible for locating this laboratory at the plant site. The laboratory shall be available to the Engineer prior to the paving operations. Building and its contents will be subject to the approval of the Engineer. The building will be not less than 12 feet by 32 feet and 8 feet high. The building will be partitioned into a minimum of two rooms, each room furnished with an exterior door and a door between rooms. All doors will have a minimum width of 36 inches and 80 inches high. All exterior openings will be

secured with burglar bars. Adequate parking area will be provided for at least two full size vehicles.

Storage room:

One room will be used for sample storage and will be 9 ft. 12 ft. It will have counters 24 inches in width and 30 inches high placed along the walls. The storage room will have a minimum total counter length of 13 ft. The room will be equipped with 1-wall light switch, 1-ceiling light and 1-20 amp-110 volt outlet.

Laboratory room:

The other room of this building will be used as a laboratory and will include access to a bathroom facility from the interior. The laboratory and bathroom facility will have the walls, ceiling and floor insulated such that the air temperature can be maintained at 76 degrees Fahrenheit at all times. The Contractor is responsible for maintaining all mechanical, electrical and plumbing facilities at all times. The top of the workbench shall not be less than 36 inches by 60 inches and will be constructed of expanded metal reinforced to support required testing equipment. A fresh air intake shall be located so solvent vapors are drawn away from the workers and prevent removal of air from the temperature-controlled space. The ovens used to dry aggregate, cure, and ignite asphalt mixes will be vented upward to the outside. The Contractor will connect the vent ducts to the ovens. The laboratory will be furnished with work counters measuring 36 inches in width and 36 inches in height along the walls. The laboratory will have a minimum total work counter length of 20 ft. A desk measuring 36 inches by 6 ft will be furnished. The laboratory portion will have two windows. A laboratory sink measuring 24 inches by 30 inches and 12 inches deep will be provided. The laboratory portion will be equipped with at least seven 20 amp-110 volt outlets, four (4) 30 amp-220 volt outlets, Two light switches on the wall and fluorescent ceiling lights capable of providing lighting meeting ANSI standards for industrial lighting. All outlets will be compatible with the electrical requirements of the equipment to be used for testing.

The Contractor shall provide for the Department's use one (1) desktop computer system to be placed in the Engineer's laboratory for asphalt mix testing. The following software and hardware listed below or approved equal shall be provided:

Software:	1 ea. MS-DOS, 1 ea. Windows 98, 1 ea. Office 97, 1 ea. Email access to TxDOT's Intranet system, and 1 ea. Antivirus software. All software shall be the most current version available on the market or what is currently being used by TxDOT.
Hardware:	1 ea. Pentium II or AMD-K6 400mhz w/ 512k cache, 64 Mb ram, 4.3 gigabyte hard drive, 40x CD ROM, 56k v.90 Fax Modem, 8 Mb sync graphics video card, 101 keyboard, serial mouse & pad, 3.5 inch 1.44 Mb

floppy drive, 17 inch SVGA color monitor, 32 bit flatbed scanner/copier with OCR software, hp 722c inkjet printer or equivalent and all incidentals necessary for hardware connections.

The Contractor shall deliver the specified software and hardware to be used by the Department prior to the commencement of any work on the project. The Contractor shall purchase and provide to the Department updates to the software as required to remain compatible with TxDOT's currently used software. In the case of needed repairs for the software or hardware, the Contractor shall provide a backup computer system meeting the same Specifications within twenty-four (24) hours. At the completion of the project, all hardware and software shall be returned to the Contractor.

The Contractor will provide and pay for the electrical, other utilities, telephone installations and the monthly service charges, and the email monthly access charges. The telephone line provided will be separate from other lines.

ITEM 508. Constructing Detours

After the detour is no longer needed for traffic, the materials, including base, shall be removed and utilized as directed by the Engineer.

Flexible Base, prime coat, and Asphaltic Concrete Pavement used for detours shall meet the requirements of Items 247, 310, and 3146 respectively, except for measurement and payment.

ITEM 512. Portable Concrete Traffic Barrier

Upon completion of the project the low profile barrier will become the property of the contractor.

ITEM 529. Concrete Curb, Gutter and Combined Curb and Gutter

Membrane curing, Type 2, will be required.

In the event that an extrusion machine is not used, application of mortar paste to accurately shape the face of the concrete curb or curb and gutter shall normally be placed within 15 minutes and not later than 25 minutes after the concrete is placed in the forms.

The entrained air requirement shall not apply to this Item.

Before final acceptance of the project, discoloration caused by tire marks, mud, asphalt, paint or other similar material shall be removed by any method satisfactory to the Engineer to achieve a uniform color and texture of the finished surface exposed to view.

ITEM 530. Driveways and Turnouts

Flexible Base shall meet the requirements of Item 247, prime coat shall meet the requirements of Item 310, and Asphaltic Concrete Pavement shall meet the requirements of Item 3146, except for measurement and payment.

Flexible Base used to construct private and/or commercial driveways will not require lime admixture.

Daily testing requirements for Hot Mix Asphaltic Concrete Pavements for drives, commercial entrances and/or turnouts may be waived by the Engineer.

The rate of prime shall be 0.10 Gal/SY for private and/or commercial driveways and 0.20 Gal/SY for public turnouts.

ITEM 531. Sidewalks

Concrete sidewalks on this project shall be 4 in depth. Concrete reinforcement shall be 6" x 6" - w2.9 x w2.9 (no. 6 gauge) welded wire fabric or #3 bars at 18" c.c. Unless otherwise shown on the plans.

Sidewalk reinforcement shall be 6" x 6" - w2.9 x w2.9 (no.6 gauge) welded wire fabric or #3 bars at 18" c.c. Unless otherwise shown on the plans.

ITEM 536. Concrete Medians and Directional Islands

Concrete for medians shall be Class "A" and reinforcement shall be 6" x 6" - w2.9 x w2.9 (no.6 gauge) welded wire fabric or #3 bars at 18" c.c. unless otherwise shown on the plans.

Application of mortar paste to accurately shape the face of the medians shall normally be placed within 15 minutes and not later than 25 minutes after the concrete is placed in the forms, in the event that an extrusion machine is not used.

Membrane curing, Type 2, will be required.

Item 618. Conduit

Conduit shall be placed in a straight line not to exceed 2.0 feet in any direction. The depth of the conduit shall be 2.0 feet except when crossing a roadway where the depth shall not be more than 3.0 feet nor less than 1.0 foot below the bottom of the base material in the roadway when placed

by the jacking or boring method. Any evidence of damage to the roadway during the jacking or boring operation shall be sufficient grounds to stop the method being used.

Conduit runs under paved roadways or driveways shall be jacked or bored and then pushed across. At these locations, galvanized rigid metal may be used. All other runs shall be made by trenching. The Contractor may trench across existing pavement, which will either be removed, reconstructed or overlaid with new pavement.

PVC conduit systems that snap or lock together without glue that are designed and UL listed to be used for bored PVC electrical conduit applications will be allowed for bored PVC schedule 40, and when approved by the Engineer, will be allowed for bored PVC schedule 80. No additional compensation will be paid to the Contractor when these specific purpose conduit systems are substituted for this purpose.

All conduit elbows and rigid metal extensions required to be installed on PVC conduit systems will not be paid for separately, but will be considered subsidiary to the various bid items.

Conduit shall be paid for under Item 618, "Conduit".

ITEM 620. Electrical Conductors

Electrical work performed by non-certified persons, as defined in the special provision to Item 8, is not in accordance with the requirements of the contract and may be rejected as unsuitable for use due to poor workmanship.

The required electrical certification course is available and is scheduled periodically by TEEX. Alternatively, contractors may purchase an entire course for their personnel to be held at a time and location of their choice as negotiated through TEEX. For more information, contact:

Texas Engineering Extension Service (TEEX)
TxDOT Electrical System Course
(979) 845-6563

ITEM 628. Electrical Service

The Contractor shall arrange for and cooperate with the utility company to provide power service to the signals. A meter will not be necessary.

Primary line extensions, connecting charges, meter charges, and other charges by the utility company to provide power to the location shown, when requested, shall be paid for under Force Account Work. The costs associated with these charges shall be approved by the Engineer prior to engaging the utility company to do the work.

ITEMS 636. Aluminum Signs

Complete sign blanks and panels shall be handled and stored at the job site in such a manner that corners, edges and faces are not damaged. Finished sign blanks shall be stored in either a weatherproof warehouse or outside and off the ground in a vertical position. All paper, cardboard and chemically treated separators and packaging shall be removed prior to outside storage.

ITEM 644. Small Roadside Sign Assemblies

All signs shall be installed in accordance with the "Texas Manual on Uniform Traffic Control Devices".

Any detail that conflicts with the standard plan sheets shall be brought to the attention of the Engineer prior to construction unless a note is placed adjacent to the detail to indicate an intentional deviation from the standard plan sheets.

All excess excavation shall be spread uniformly inside the right of way as directed by the Engineer and shall be included in the price of these Items.

All signs shall be erected according to the locations shown on the signing layout sheets except that the Engineer may shift a sign in order to secure a more desirable location. The Contractor will stake all sign locations as shown in the plans and approved by the Engineer. It is the intent of the plans to erect all roadside traffic signs with the sign edge a minimum of 6 feet from the edge of the shoulder, or if none, 12 feet from the edge of the travel lane. In curb and gutter sections, the sign edge shall be a minimum of 2 feet from the face of the curb.

For this project, the Contractor will be required to provide aluminum type of sign blanks as provided for under Item 636 for all proposed signing installed under Item 644. Aluminum sign blanks less than 7.5 square feet shall be 0.08 inch thick, sign blanks 7.5 to 15 square feet shall be 0.100 inch thick and sign blanks greater than 15 square feet shall be 0.125 inch thick.

Sign types which design details are not shown on the plans shall conform with the latest edition of the Department's "Standard Highway Sign Design for Texas" Manual.

ITEM 649. Removing or Relocating Roadside Sign Assemblies

The Contractor shall remove the complete sign installation and separate the sign post at the concrete foundation. The Contractor shall dispose of the concrete foundation in accordance with this Bid Item. Except for concrete foundations, all removed sign panels, sign posts, and hardware shall remain the property of the Department, except as noted in the plan layouts. All

removed sign installations shall be completely disassembled. All salvageable sections of sign panels shall be recycled by TxDOT. The Contractor will be required to haul the removed sign material to the maintenance yard closest to the project. No signs shall be removed without prior approval of the Engineer.

ITEM 649. Removing or Relocating Roadside Sign Assemblies

All existing signs in this project shall be removed as determined in the field by the Engineer. The Contractor shall remove the complete sign assembly and separate the sign and post at the concrete Foundation. The Contractor shall dispose of the concrete foundation in accordance with this bid Item. No sign shall be removed without prior approval of the Engineer.

All excess excavation shall be spread uniformly inside the Right of Way as directed by the Engineer and shall be included in the price of this item.

ITEM 656. Foundations for Signs, Traffic Signals and Roadway Illumination Assemblies

The dimensions shown on the plans for location of signal pole foundations, conduit and other Items may be varied to meet existing conditions, subject to approval by the Engineer.

All concrete for traffic signal pole foundations shall be Class "C".

The Contractor shall clean up and remove from the work area all loose material resulting from the contract operations each day before work is suspended.

No traffic signal pole shall be placed on the foundations prior to seven (7) days following placement of concrete.
The Contractor’s attention is directed to the possible presence of underground utilities on the Right of Way on this project. It is the responsibility of the Contractor to call for locations 48 hours in the advance of excavation or drilling.

Foundations shall be paid for under Item 656, "Foundations for Signs, Traffic Signals and Roadway Illumination Assemblies".

ITEM 658. Delineator and Object Marker Assemblies

Delineator assemblies shall be installed 8 feet from the edge of the shoulder unless restricted by some obstruction, in which case, the delineator assembly shall be placed between 2 and 8 feet from the edge of the shoulder.

Bi-directional installation of object markers shall be by any method satisfactory to the Engineer.

ITEMS 662 AND 666. Work Zone Pavement Markings and Reflectorized Pavement Markings

All permanent pavement markings and work zone pavement markings for this project under these Items shall be 0.090 inches (90 mil) thick thermoplastic.

Any permanent pavement markings or non-removal work zone pavement markings lacking reflectivity in accordance with test method Tex 828-B, will not be paid for, as per district policy. The Contractor will be required to restripe at his own expense.

Before the roadways are overlaid, the Contractor will be responsible for noting and recording the location and configuration of all existing pavement markings for use in installing the final permanent pavement marking. All roadways are to be striped as existing, unless otherwise noted in the plans or as determined by the Engineer.

Pavement surface preparation for markings and markers will not be paid for directly, but shall be considered subsidiary to Item 666.

Prior to any striping operations, an on-site coordination meeting between the prime and Sub Contractor superintendents and the TxDOT inspector will be required to review striping details and requirements to ensure quality work. This does not relieve the striping Contractor from required adherence to plans and Specifications.

The beads used on this project shall meet the requirements of Departmental Materials Specification DMS-8290, Glass Traffic Beads Texas Type III.

ITEM 677. Eliminating Existing Pavement Markings and Markers

Asphalt and aggregate types and grades shall be as approved in writing by the Engineer when a surface treatment is used to eliminate existing pavement markings.

ITEM 680. Installation of Highway Traffic Signals

The installation of highway traffic signals shall consist of the following principal Items:

1. Furnishing and installing 8-phase full traffic actuated controllers, base mounted cabinets, conflict monitors, load switches and loop amplifiers.
2. Furnishing and installing post mounted flashing beacon controllers and cabinets.
3. Furnishing and installing either, steel strain and/or mast arm poles, electrical service, signal heads and cables, pedestrian heads and push buttons with signs that meet the "Americans with Disabilities Act" Standards, galvanized steel span wire, loop detectors, ground boxes, conduit runs and controller foundations.

4. Removal and disposal of existing signal material specified in the plans.
5. The Contractor shall also furnish and install all other Items not listed above which are needed to provide for complete traffic signal installations and for proper signal operation as called for in the plans and specifications.

The following general notes apply to the upgrading of the existing hardwire closed loop signal system with spread spectrum radio communications on the SH 107 signal system, from Jackson Road to 4th Avenue.

1. Furnishing and installing traffic signal controller equipment that is compatible with the existing Marc NX closed loop system on SH 107.

2. Programming local and master controllers with the timing plans provided in the plans to achieve coordinated signal operation.

3. Reconnecting a telephone drop at the master location, and furnishing and installing any materials not furnished or installed by the telephone company.

4. Furnishing and installing a high speed modem as well as all cable connections to the controller equipment at the master location.

5. Performing any necessary set up work on the existing closed loop system software at the Pharr District office, for a complete and operational closed loop system station.

6. Setting up and testing communications between the traffic control office, master controller and secondary controllers.

For the closed loop traffic signal system implementation, the contractor shall conform to the applicable provisions of Special Specification 6401 with the following amendments:

1. Section 5 Primary Communications Link- The primary communications link shall be spread spectrum radio at minimum 9600 BPS between the local controllers and the on-street master. These items are to be furnished and installed by the contractor.

2. Section 7 Secondary Communications Link- The secondary communications link will be an existing two-way telephone line (telephone drop) at minimum 9600 BPS with a local number assigned to the on-street master.

3. Section 8 Central Control- The contractor shall set up the existing Marc NX closed loop system software in the system computer located at the Pharr District office.

4. Section 11 System Testing- The contractor shall arrange for a controller manufacturer's technician to perform system implementation, system integration test and operational test.

5. Section 12 Deliverable Services- the contractor shall arrange for a controller manufacturer's technician to perform operational training, maintenance training, operational support and system start-up assistance. Operational and maintenance training shall be limited to one day for three people at the Pharr District Office.

6. Section 16 Measurement And Payment- The work performed, materials furnished, and all labor, tools, equipment, and incidentals necessary to complete the work under this item will not be measured or paid for directly but will be considered subsidiary to Item 680 "Installation of Highway Traffic Signals (System)". Telephone drop connection will be considered subsidiary to the Item "Installation of Highway Traffic Signals (System)".

Any deviation of location for proposed signal work shall be as approved by the Engineer.

Signal controller

The signal installations shall be wired in accordance with the phase diagrams in the plans. The proposed base mounted cabinets shall contain 8-phase conflict monitors, which display the "R-Y-G" and "Walk" phases. In addition to detecting phasing conflicts, the MMU shall also be able to detect multiple signal head indications within every phase. The MMU shall continue to operate in the event of a power supply failure in the timer and shall be able to retain in memory the time and date of the failure detection. Time changes shall be programmable in the field without replacing components or use of external devices. The full-actuated controllers shall meet N.E.M.A. Specifications. The flasher Controllers shall be solid state.

The Contractor shall arrange for a controller manufacturer's technician to load initial timing programs into the controllers as called for in the plans. Once the traffic signals are turned on, The same technician shall monitor the signal operation and traffic movement and shall adjust settings for best signal operation and to the satisfaction of the Engineer in the field. The technician shall provide the State with a certification that the timing plan and coordination has been established according to the plans. This certification shall include a record showing all settings and functions programmed into the timer and any related units.

All wiring not covered by the plans and specifications shall be in accordance with the latest edition of the National Electrical Code,

Under this Item, the proposed cabinets shall be base mounted or as shown in the plans.

Grounding and bonding

A continuous bare or green insulated copper wire no. 8 or larger shall be installed in every conduit throughout the electrical and traffic signal system in accordance with Item 680, the Electrical Detail Sheets and the latest edition of the National Electrical Code, except for conduits with loop detectors only.

Existing utilities

All fees and costs for permits and work done by the utility companies for any utility adjustments will be considered subsidiary to the various bid Items of this project and will not be paid for directly.

The Contractor shall verify with the utility companies the exact location of existing underground utilities prior to construction to avoid conflict with or damage to these utilities.

The Contractor shall coordinate with the utility companies to make any adjustments, due to utility conflicts, as defined in the specifications or deemed necessary by the Engineer. Utility adjustment may include aerial 6 pair cable attached to existing utility poles (McColl Rd to 4th Ave)

The Contractor shall contact the local Power Company prior to beginning of signal construction. The Contractor shall also coordinate with the Power Company for the raising of power lines where deemed necessary.

References

References to manufacturers' trade names or catalog numbers are for the purpose of identification only and the Contractor will be permitted to furnish like materials of other manufacturers provided they are of equal quality and comply with the specifications and are approved by the Engineer.

Uniformity in equipment

1. All traffic signal controllers furnished by the Contractor shall be by the same manufacturer.
2. All flashing beacon controllers furnished by the Contractor shall be by the same manufacturer.
3. All traffic signal heads and flashing beacon heads furnished by the Contractor shall be by the same manufacturer.
4. All signal fittings and pipe brackets shall be of an approved metallic material and of the same design and manufacturer.
5. All traffic signal poles furnished by the Contractor shall be by the same manufacturer.

6. All loop detector amplifiers furnished by the Contractor shall be by the same manufacturer and of the same type.

Handling of traffic

Roads and streets shall be kept open to traffic at all times. The Contractor shall arrange the setting of loop detectors so as to close only one lane of a roadway at a time. The Contractor shall arrange the installation of signal heads, poles and conduit so as to permit the continuous movement of traffic in both directions at all times.

All construction operations shall be conducted to provide the least possible interference to traffic as shown on the plans, as provided for in the specifications and/or as directed by the Engineer. All signing, barricading and handling of traffic shall conform to the "Texas Manual on Uniform Traffic Control Devices".

Sequence of work

1. The existing traffic signal installations and/or flashing beacon installations shall remain in operation at all times during construction of the proposed traffic signal and/or flashing beacon installations or modifications.
2. The Contractor shall completely remove the specified existing traffic signal and/or flashing beacon installations or specified Items when the proposed traffic signal and/or flashing beacon installations are in place and operational.
3. All labor, tools, and materials used to remove the specified traffic signal material shall be done in accordance with Item 6010, "Salvaging Traffic Signals".
4. Final inspection shall be done in conjunction with the district signal shop.

ITEM 682. Vehicle and Pedestrian Signal Heads

All signal heads shall be covered with burlap from the time of installation until the signal is placed in operation. All signal Heads shall be of Polycarbonate material and yellow in color. Signal heads shall have standard detachable visors. The Contractor shall furnish new long life 135-watt traffic signal lamps for all traffic signal heads.

Signal heads shall be positioned carefully to provide the best view of signal indications to motorists. All signal heads shall be installed to a neat overall appearance.

Nominal height for signal heads above pavement surface shall be 18 feet 6 inches, plus/minus 3 inches.

Pedestrian signal heads shall be positioned carefully to provide the best view to pedestrians.

Pedestrian head housing shall be paid for under Item 682, “Vehicle and Pedestrian Signal Heads”. Pedestrian head LED lenses shall be paid for under Item 8230, “LED Ped Sig Lamp”.

Signal head red lenses shall be LED and paid for under Item 1201, “LED Traf Signal Lamp”. Signal head housings and lenses (except red lenses) shall be paid for under Item 682, “Vehicle and Pedestrian Signal Heads”.

ITEM 684. Traffic Signal Cable

All signal cable shall be #12 AWG and shall be paid for under Item 684, "Traffic Signal Cables".

All signal cable shall be #12 AWG, 2/c loop Lead-In shall be #14 AWG shielded and loop wires in pavement shall be #14 AWG.

Luminaires shall be connected with 3 conductor #12 AWG (XHHW) tray cable.

All signal cable shall be paid under Item 684, "Traffic Signal Cables".

ITEM 686. Traffic Signal Pole Assemblies (Steel)

The locations for the proposed traffic signal poles are approximate. The exact locations will be determined in the field by the Engineer in coordination with the Pharr District Signal Shop.

Erection and/or removal of poles and luminaries located near any overhead electrical power lines shall be accomplished using established industry and utility safety practices. The Contractor shall consult with the appropriate utility company prior to beginning such work.

Signal poles shall be paid under Item 686, "Traffic Signal Pole Assemblies (Steel)".

ITEM 688. Traffic Signal Detectors

The Contractor shall install loop detectors to replace those damaged or destroyed due to construction operations. Before milling operations begin, the Contractor shall mark all existing loop detector locations and obtain their configuration and orientation for replacement with same size loop detectors.

Any deviation of location for proposed loop detector work shall be as approved by the Engineer. Loop vehicle detectors shall be installed in accordance with plan Standard Sheet LD1-98 (Loop Detector Installation Details). All loop detectors shall be rectangular.

Loop wires in street shall be #14 AWG.

Splices for loop wire will be permitted only at ground boxes or pole base with Scotchcast or Hysol Electrical Insulating Resin weatherproof splice kits or approved equal.

A minimum length of 2 feet for each cable shall be left in each ground box.

All wiring not covered by the plans and specifications shall be in accordance with the latest edition of the National Electrical Code.

References

References to manufacturers' trade names or catalog numbers are for the purpose of identification only and the Contractor will be permitted to furnish like materials of other manufacturers provided they are of equal quality and comply with the specifications and are approved by the Engineer.

Handling of traffic

Roads and streets shall be kept open to traffic at all times. The Contractor shall arrange the setting of loop detectors so as to close only one lane of a roadway at a time and to permit the continuous movement of traffic in both directions at all times.

All construction operations shall be conducted to provide the least possible interference to traffic as shown on the plans, as provided for in the specifications and/or as directed by the Engineer. All signing, barricading and handling of traffic shall conform to the, "Texas Manual on Uniform Traffic Control Devices".

Sequence of work

1. The existing traffic signal installation shall remain in operation at all times during construction of the proposed loop detector work.
2. Final inspection shall be done in conjunction with the TxDOT Pharr District Signal Shop.

The Engineer shall install Loop vehicle detectors in accordance with the Intersection layouts in the plans or as directed. Each loop detector Lead-In cable shall be tagged inside the controller cabinet with its loop number. The loop amplifiers shall indicate the loop and phase of control or direction of control. Loop wires in street shall be #14 AWG. Pedestrian detectors shall meet the minimum requirements called for by the "Americans with Disabilities Act".

Loop detector Lead-In cable shall be continuous from ground box to the controller.

Splices for loop wire will be permitted only at ground boxes or pole base with Scotchcast or Hysol electrical insulating resin weatherproof splice kits or approved equal.

A minimum length of 2.0 feet for each cable shall be left in each ground box.

Vehicle and pedestrian detectors shall be paid for under Item 688, "Traffic Signal Detectors".

ITEM 3146. QC/QA of Hot Mix Asphalt

The contractor shall exercise diligence in the application of "Tack Coat" by the use of flagging and rolling procedures to keep from spraying or splattering the travelling public with asphaltic material.

Blading may also be necessary to clean dirt and grass from pavement edges and turnout areas as work under this bid Item. The cost of this blading will not be paid for directly, but shall be considered subsidiary to this bid Item.

This project will require a Minimum Aggregate Classification of "A".

Crushed gravel fine aggregate (screenings) will be allowed.

Shoulders and/or ramps will require in-place air void testing and pay adjustments.

Lime shall be used as an antistripping agent for this project.

ITEM 4315. Irrigation Wells, Gates and Valves

If the Contractor elects, a larger size Item may be furnished and installed at no extra cost to the State.

ITEM 5004. Temporary Erosion, Sediment and Water Pollution Prevention and Control

The SW3P for this project shall consist of using the following Items as directed by the Engineer:

Temporary Sediment Control Fence
Rock Filter Dams for Erosion and Sedimentation Control
Baled Hay for Erosion and Sedimentation Control
Construction Exits
Earthwork for Erosion Control

ITEM 5519. Transportable Cellular Telephones

Payment to the contractor for providing transportable cellular telephones will be made by “Force Account Work”. Number of transportable cellular phones to be established by the Engineer.

ITEM 5559. Colored-Texturized Concrete

The Contractor shall pour and finish a 3' x 3' sample panel of "Colored-Texturized Concrete". The panel shall meet with the requirements of the plans and Specifications and be approved by the Engineer before further "Colored-Texturized Concrete" may be poured. The sample panel shall be considered typical for the finish, any deviation of color, grade, or depth from the sample panel shall be grounds for rejection of "Color Texturized Concrete" and shall be removed and replaced as specified by the Contractor. The sample panel or any required replacement of "Color Texturized Concrete" shall not be paid for directly but shall be considered subsidiary to Item 5559, "Colored-Texturized Concrete".

ITEM 5866. Curb Ramp and Landing

Curb ramp and landing on this project shall be 4” in depth. Concrete reinforcement shall be 6”X6” – W 2.9 X W 2.9 (no. 6 gauge) welded wire fabric or #3 bars at 18” c.c. unless otherwise shown on the plans.

ITEM 5880. Ride Quality for Pavement Surfaces

Ride quality shall be measured utilizing Surface Test Type "B".

Inertial profiler results shall be submitted to TxDOT the next working day after each day’s paving.

Pavement areas with consecutive public turnout intersections less than 350 ft. in spacing and/or with structures creating discontinuity of paving operations will not be subjected to inertial profiler testing. These areas shall be evaluated using the 10-ft. Straightedge.

Ride quality shall be measured utilizing Surface Test Type "A".

For this project schedule 3 will apply.

This project will require schedule 2 with Localized Roughness (LR) penalty accessed.

ITEM 6009. ROADSIDE FLASHING BEACON ASSEMBLY

The roadside flashing beacons shall be installed at locations shown on the signing detail sheets and as shown on Standard Sheet RFBA-98.

All wiring not covered by the plans and specifications shall be in accordance with the latest edition of the National Electrical Code.

Grounding and bonding

A continuous bare or green insulated copper wire no. 8 or larger shall be installed in every conduit throughout the electrical system in accordance with the electrical detail sheets and the latest edition of the National Electrical Code.

Existing utilities

All fees and costs for permits and work done by the utility companies for any utility adjustments will be considered subsidiary to the various bid Items of this project and will not be paid for directly.

The Contractor shall verify with the utility companies the exact location of existing underground utilities prior to construction to avoid conflict with or damage to these utilities.

The Contractor shall coordinate with the utility companies to make any adjustments, due to utility conflicts, as defined in the specifications or deemed necessary by the Engineer.

Handling of traffic

All construction operations shall be conducted to provide the least possible interference to traffic as shown on the plans, as provided for in the specifications and/or as directed by the Engineer. All signing, barricading and handling of traffic shall conform to the "Texas Manual on Uniform Traffic Control Devices".

ITEM 8288 Spread Spectrum Radio for Traffic Signals

The contractor shall furnish, install and make fully operational a spread spectrum radio system to provide communications within the proposed SH 107 closed loop system as directed by the engineer and in accordance with Special Specification 8288 and related Special Provisions. Any necessary software shall be compatible with the Windows operating system in the Central Control Computer in the Pharr District office.

The spread spectrum antennas shall be mounted on the signal pole closest to the controller cabinet unless otherwise directed by the engineer. The coaxial cable running from the antenna to the controller shall not be exposed to the outdoor environment.

All terminals and equipment necessary for closed loop system operation shall be provided and in the cabinet, including terminals for the communications system. All cables necessary to provide complete closed loop system operation as stated above shall be provided and installed.

YAGI antennas shall be oriented towards the omni-directional antenna located at the master controller intersection in a manner that reception is optimum.

The contractor shall furnish and install coaxial cable from the radio unit inside the controller cabinet to the antennas on the signal poles. Connections at either end shall be done as per controller equipment manufacturer recommendations and as approved by the engineer. The contractor shall be responsible for the proper connections and shall utilize trained personnel to accomplish this and other tasks dealing with electronic equipment.

Coax surge suppressors shall be installed in the line between the antenna and the radio unit, “polyphaser” or approved equal.

The cable connection at the antenna shall be sealed and weatherproofed with a sealant compound, “Hutton”, “3M”, or approved equal.

CONTROL : 0528-01-077, ETC
PROJECT : NH 2004(442), ETC
HIGHWAY : SH 107
COUNTY : HIDALGO

TEXAS DEPARTMENT OF TRANSPORTATION

GOVERNING SPECIFICATIONS AND SPECIAL PROVISIONS

ALL SPECIFICATIONS AND SPECIAL PROVISIONS APPLICABLE TO THIS PROJECT ARE IDENTIFIED AS FOLLOWS:

STANDARD SPECIFICATIONS: ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION MARCH 1, 1993. STANDARD SPECIFICATIONS ARE INCORPORATED INTO THE CONTRACT BY REFERENCE.

ITEMS 1 TO 9 INCL., GENERAL REQUIREMENTS AND COVENANTS
ITEM 100 PREPARING RIGHT OF WAY (132)
ITEM 104 REMOVING CONCRETE
ITEM 110 EXCAVATION (132)
ITEM 132 EMBANKMENT (100)(204)(400)
ITEM 164 SEEDING FOR EROSION CONTROL (166)(168)(169)(300)
ITEM 168 VEGETATIVE WATERING
ITEM 204 SPRINKLING
ITEM 247 FLEXIBLE BASE (204)(303)(520)
ITEM 251 REWORKING BASE MATERIAL (204)(247)(520)
ITEM 260 LIME TREATMENT FOR MATERIALS USED AS SUBGRADE (ROAD MIXED) (132)(204)(264)(300)(520)
ITEM 262 LIME TREATMENT FOR BASE COURSES (ROAD MIXED) (204)(247) (260)(264)(300)(520)
ITEM 310 PRIME COAT (CUTBACK ASPHALTIC MATERIAL) (300)
ITEM 316 SURFACE TREATMENTS (210)(213)(300)(302)(303)(520)
ITEM 354 PLANING AND/OR TEXTURING PAVEMENT
ITEM 400 EXCAVATION AND BACKFILL FOR STRUCTURES (132)(402)(403) (420)(421)(524)
ITEM 402 TRENCH EXCAVATION PROTECTION
ITEM 432 RIPRAP (247)(420)(421)(427)(431)(440)(520)(522)(524)(526)
ITEM 464 REINFORCED CONCRETE PIPE (400)
ITEM 465 MANHOLES AND INLETS (400)(420)(421)(424)(427)(440)(442) (448)(471)(520)(524)(526)
ITEM 496 REMOVING OLD STRUCTURES (430)(497)
ITEM 500 MOBILIZATION
ITEM 502 BARRICADES, SIGNS AND TRAFFIC HANDLING
ITEM 504 FACILITIES FOR FIELD OFFICE AND LABORATORY (5519)
ITEM 508 CONSTRUCTING DETOURS (247)(275)(276)(316)(330)(334)(340) (345)

ITEM 512 PORTABLE CONCRETE TRAFFIC BARRIER (421)(424)(437)(440)(442)(526)
ITEM 529 CONCRETE CURB, GUTTER AND COMBINED CURB AND GUTTER (360)(420)(421)(437)(440)(526)
ITEM 530 DRIVEWAYS AND TURNOUTS (247)(310)(360)(522)(3146)
ITEM 531 SIDEWALKS (360)(420)(421)(437)(440)(526)
ITEM 536 CONCRETE MEDIANS AND DIRECTIONAL ISLANDS (420)(421)(433)(440)(526)(529)
ITEM 618 CONDUIT (400)(476)(622)
ITEM 620 ELECTRICAL CONDUCTORS (610)(628)
ITEM 624 GROUND BOXES (421)(440)
ITEM 625 ZINC-COATED STEEL WIRE STRAND
ITEM 628 ELECTRICAL SERVICES (441)(445)(449)(618)(620)(627)(656)
ITEM 644 SMALL ROADSIDE SIGN ASSEMBLIES (421)(440)(634)(636)(646)(656)
ITEM 649 REMOVING OR RELOCATING ROADSIDE SIGN ASSEMBLIES (445)(634)(636)(637)(643)(646)(647)(656)
ITEM 656 FOUNDATIONS FOR SIGNS, TRAFFIC SIGNALS AND ROADWAY ILLUMINATION ASSEMBLIES (400)(416)(420)(421)(440)(449)(524)(618)(644)
ITEM 662 WORK ZONE PAVEMENT MARKINGS (666)(672)(677)
ITEM 666 REFLECTORIZED PAVEMENT MARKINGS (677)(678)
ITEM 672 RAISED PAVEMENT MARKERS (677)(5699)
ITEM 677 ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS (300)(302)(316)(678)
ITEM 680 INSTALLATION OF HIGHWAY TRAFFIC SIGNALS (400)(421)(440)(446)(476)(610)(618)(620)(624)(625)(627)(628)(634)(636)(656)(682)(684)(686)(688)(6001)(6002)(6003)(6004)(6005)(6007)(6010)(6032)(8524)(8964)
ITEM 682 VEHICLE AND PEDESTRIAN SIGNAL HEADS
ITEM 684 TRAFFIC SIGNAL CABLES
ITEM 686 TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (441)(442)(445)(449)(656)
ITEM 688 TRAFFIC SIGNAL DETECTORS (618)(624)(682)(684)

SPECIAL PROVISIONS: SPECIAL PROVISIONS WILL GOVERN AND TAKE PRECEDENCE OVER THE SPECIFICATIONS ENUMERATED HEREON WHEREVER IN CONFLICT THEREWITH.

REQUIRED CONTRACT PROVISIONS, FEDERAL-AID CONSTRUCTION CONTRACTS
(FORM FHWA 1273, DECEMBER, 1993)
WAGE RATES
SPECIAL PROVISION "STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS" (000---001)
SPECIAL PROVISION "NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY" (000--1981)
SPECIAL PROVISION "CERTIFICATION OF NONDISCRIMINATION IN EMPLOYMENT" (000---003)
SPECIAL PROVISION "SCHEDULE OF LIQUIDATED DAMAGES" (000--4025)
SPECIAL PROVISION "OPTIONAL TRAINING" (000--3487)
SPECIAL PROVISION "DISADVANTAGED BUSINESS ENTERPRISE IN FEDERAL-AID CONSTRUCTION" (000--4072)

SPECIAL PROVISION "NOTICE TO ALL BIDDERS" (000---482)
SPECIAL PROVISION "PARTNERING" (000--2169)
SPECIAL PROVISION "IMPORTANT NOTICE TO CONTRACTORS" (000--4214)
SPECIAL PROVISION "IMPORTANT NOTICE TO CONTRACTORS" (000--4215)
SPECIAL PROVISIONS TO ITEM 1 (001---108)(001---182)
SPECIAL PROVISION TO ITEM 2 (002---106)
SPECIAL PROVISION TO ITEM 3 (003---065)
SPECIAL PROVISION TO ITEM 4 (004---014)
SPECIAL PROVISION TO ITEM 5 (005---027)
SPECIAL PROVISIONS TO ITEM 6 (006---018)(006---021)(006---025)
(006---033)
SPECIAL PROVISIONS TO ITEM 7 (007---001)(007---004)(007--1059)
ADDENDUM I TO SPECIAL PROVISION TO ITEM 7 (007--1085)
SPECIAL PROVISIONS TO ITEM 8 (008---117)(008---157)(008---244)
SPECIAL PROVISION TO ITEM 9 (009---062)
SPECIAL PROVISION TO ITEM 110 (110---004)
SPECIAL PROVISION TO ITEM 164 (164---006)
SPECIAL PROVISION TO ITEM 169 (169---002)
SPECIAL PROVISION TO ITEM 213 (213---001)
SPECIAL PROVISION TO ITEM 247 (247---018)
SPECIAL PROVISION TO ITEM 260 (260---001)
SPECIAL PROVISION TO ITEM 264 (264---001)
SPECIAL PROVISIONS TO ITEM 300 (300---065)(300---066)(300---067)
(300---068)(300---081)
SPECIAL PROVISION TO ITEM 301 (301---012)
SPECIAL PROVISIONS TO ITEM 302 (302---019)(302---027)
SPECIAL PROVISION TO ITEM 303 (303---006)
SPECIAL PROVISION TO ITEM 316 (316---004)
SPECIAL PROVISION TO ITEM 330 (330---007)
SPECIAL PROVISION TO ITEM 334 (334---006)
SPECIAL PROVISION TO ITEM 340 (340---007)
SPECIAL PROVISION TO ITEM 345 (345---003)
SPECIAL PROVISION TO ITEM 354 (354---007)
SPECIAL PROVISION TO ITEM 360 (360---053)
SPECIAL PROVISION TO ITEM 400 (400---027)
SPECIAL PROVISION TO ITEM 416 (416---008)
SPECIAL PROVISION TO ITEM 420 (420---015)
SPECIAL PROVISION TO ITEM 421 (421---028)
SPECIAL PROVISION TO ITEM 424 (424---006)
SPECIAL PROVISION TO ITEM 427 (427---002)
SPECIAL PROVISION TO ITEM 433 (433---003)
SPECIAL PROVISION TO ITEM 437 (437---001)
SPECIAL PROVISION TO ITEM 440 (440---005)
SPECIAL PROVISION TO ITEM 441 (441---008)
SPECIAL PROVISION TO ITEM 442 (442---018)
SPECIAL PROVISION TO ITEM 445 (445---001)
SPECIAL PROVISION TO ITEM 446 (446---008)
SPECIAL PROVISION TO ITEM 449 (449---001)
SPECIAL PROVISION TO ITEM 464 (464---003)
SPECIAL PROVISION TO ITEM 502 (502---027)
SPECIAL PROVISION TO ITEM 512 (512---001)
SPECIAL PROVISION TO ITEM 520 (520---001)
SPECIAL PROVISION TO ITEM 522 (522---002)
SPECIAL PROVISION TO ITEM 524 (524---007)

SPECIAL PROVISION TO ITEM 526 (526---003)
SPECIAL PROVISION TO ITEM 530 (530---012)
SPECIAL PROVISION TO ITEM 531 (531---018)
SPECIAL PROVISION TO ITEM 556 (556---001)
SPECIAL PROVISION TO ITEM 610 (610---002)
SPECIAL PROVISION TO ITEM 618 (618---013)
SPECIAL PROVISION TO ITEM 624 (624---011)
SPECIAL PROVISION TO ITEM 625 (625---004)
SPECIAL PROVISION TO ITEM 649 (649---002)
SPECIAL PROVISION TO ITEM 656 (656---011)
SPECIAL PROVISION TO ITEM 662 (662---008)
SPECIAL PROVISION TO ITEM 666 (666---043)
SPECIAL PROVISION TO ITEM 672 (672---012)
SPECIAL PROVISION TO ITEM 680 (680---007)
SPECIAL PROVISION TO ITEM 686 (686---003)
SPECIAL PROVISION TO SPECIAL SPECIFICATION ITEM 3146 (3146--017)
SPECIAL PROVISION TO SPECIAL SPECIFICATION ITEM 8230 (8230--001)
SPECIAL PROVISION TO SPECIAL SPECIFICATION ITEM 8964 (8964--001)

SPECIAL SPECIFICATIONS:

ITEM 1201 12 INCH LED TRAFFIC SIGNAL LAMP UNIT (682)
ITEM 1619 TRAY CABLE
ITEM 3146 QUALITY CONTROL/QUALITY ASSURANCE OF HOT MIX ASPHALT (264)(300)(301)(310)(520)(5880)
ITEM 3637 COMPUTER EQUIPMENT
ITEM 5004 TEMPORARY EROSION, SEDIMENTATION AND WATER POLLUTION PREVENTION AND CONTROL
ITEM 5005 ROCK FILTER DAMS FOR EROSION AND SEDIMENTATION CONTROL (5004)(5012)
ITEM 5007 BALED HAY FOR EROSION AND SEDIMENTATION CONTROL (5004) (5012)
ITEM 5010 CONSTRUCTION EXITS (5004)(5012)
ITEM 5012 EARTHWORK FOR EROSION CONTROL (556)(5004)
ITEM 5249 TEMPORARY SEDIMENT CONTROL FENCE (5004)
ITEM 5519 TRANSPORTABLE CELLULAR TELEPHONES
ITEM 5699 EPOXY AND ADHESIVES
ITEM 5866 CURB RAMP AND LANDING (104)(360)(420)(421)(437)(440)(526)
ITEM 5880 RIDE QUALITY FOR PAVEMENT SURFACES
ITEM 6001 DIGITAL LOOP VEHICLE DETECTOR UNIT
ITEM 6002 FLASHER CONTROLLER ASSEMBLY
ITEM 6003 VEHICLE LOOP WIRE SEALANT
ITEM 6004 THREE CONDUCTOR NEUTRAL SUPPORTED SECONDARY CABLE (TRIPLEX)
ITEM 6005 PROGRAMMABLE SIGNAL HEADS
ITEM 6007 ROADWAY LIGHTING ON TRAFFIC SIGNAL POLE (610)(620)(628) (686)
ITEM 6009 ROADSIDE FLASHING BEACON ASSEMBLIES (441)(442)(445)(446) (447)(449)(618)(620)(6002)
ITEM 6010 SALVAGING TRAFFIC SIGNALS
ITEM 6032 HORIZONTAL SIGN LIGHT
ITEM 6955 12 INCH LED TRAFFIC SIGNAL LAMP UNIT

ITEM 8230 LED PEDESTRIAN SIGNAL LAMP UNIT (SYMBOLIC)
ITEM 8288 SPREAD SPECTRUM RADIO FOR TRAFFIC SIGNALS
ITEM 8524 PEDESTAL POLE ASSEMBILES (445)(446)(6009)
ITEM 8964 TRAFFIC SIGNAL CONTROLLER (TS-2) (680)

GENERAL: THE ABOVE-LISTED SPECIFICATION ITEMS ARE THOSE UNDER WHICH
------- PAYMENT IS TO BE MADE. THESE, TOGETHER WITH SUCH OTHER PERTINENT ITEMS, IF ANY, AS MAY BE REFERRED TO IN THE ABOVE-LISTED SPECIFICATION ITEMS, AND INCLUDING THE SPECIAL PROVISIONS LISTED ABOVE, CONSTITUTE THE COMPLETE SPECIFICATIONS FOR THIS PROJECT.

SPECIAL SPECIFICATION

6955

12 Inch Led Traffic Signal Lamp Unit

1. Description. This specification describes the minimum acceptable design and performance requirements for a twelve (12) inch LED (light emitting diode) traffic signal lamp unit.

2. 12 Inch Led Traffic Signal Lamp Unit.

(1) General.

(a) The LED traffic signal lamp unit shall be designed to retrofit existing traffic signal housings built to ITE Vehicle Traffic Signal Head Standards without the use of any special tools.

(b) Installation of a retrofit replacement LED traffic signal lamp unit into an existing signal housing shall only require removal of the existing lens, reflector, and incandescent lamp, fitting of the new unit securely in the housing door, and connecting to existing electrical wiring or terminal block by means of simple connectors.

(c) If proper orientation of the LED unit is required for optimum performance, prominent and permanent directional marking(s), that is an "UP arrow," for correct indexing and orientation shall exist on the unit.

(d) The manufacturer's name, serial number and other necessary identification shall be permanently marked on the backside of the LED traffic signal lamp unit. A label shall be placed on the unit certifying compliance to ITE standards.

(2) Physical and Mechanical Requirements.

(a) The LED traffic signal lamp unit shall be a single, self- contained device, not requiring on-site assembly for installation into an existing traffic signal housing.

(b) The assembly and manufacturing process for the LED traffic signal lamp unit assembly shall be such as to assure all internal LED and electronic components are adequately supported to withstand mechanical shock and vibration from high winds and other vibration sources.

(c) Each LED traffic signal lamp unit shall comprise a UV stabilized polymeric outer shell, multiple LED light sources and a regulated power supply. LEDs are to be mounted on a polycarbonate positioning plate or conformally coated PC board.

(3) Optical and Light Output Requirements.

(a) The LEDs shall be manufactured using AlInGaP (Aluminum-Indium-Gallium-Phosphorous) technology or other LEDs with lower susceptibility to temperature degradation than AlGaAs (Aluminum-Gallium-Arsenic) LEDs. AlGaAs (Aluminum-Gallium-Arsenic) LEDs will not be allowed.

(b) The color of the LED signal lamp shall be specified as on the plans.

(c) Each LED traffic signal lamp shall meet minimum laboratory light intensity values, color (chromaticity), and light output distribution as described in ITE Standards, as shown in Section 11.04 Table 1 and Section 8.04 Figure 1 of the VTCSH (Vehicle Traffic Control Signal Head Standard). Each LED traffic signal lamp unit shall meet the minimum requirements for light output for the entire range from 80 to 135 volts.

(4) Electrical.

(a) Each unit shall incorporate a regulated power supply engineered to electrically protect the LEDs and maintain a safe and reliable operation. The power supply shall provide capacitor filtered DC regulated current to the LEDs per the LEDs' manufacturer's specification.

(b) The LED traffic signal lamp unit shall operate on a 60 Hz AC line voltage ranging from 80 volts RMS to 135 volts RMS. The circuitry shall prevent flickering over this voltage range. Nominal rated voltage for all measurements shall be 117 volts RMS.

(c) The LED traffic signal lamp unit shall be operationally compatible with controller units, conflict monitors, and malfunction management units currently used by the Texas Department of Transportation.

(d) The module shall be designed to sense a loss of light output due to catastrophic LED failures of between 25 and 40 percent. Loss of light output due to LED failure will not be detected for losses of less than 25 percent but will be detected for any loss of light greater than 40 percent. The unit, upon sensing a valid loss of light, shall present an impedance of at least 500 Kohms to the AC line.

(e) Two, captive, color coded, 36 inches long, 600 V, 18 AWG minimum jacketed wires, conforming to the National Electric Code (NEC), rated for service at +105 C, are to be provided for an electrical connection.

(f) One schematic diagram shall be provided for each LED lamp unit, along with any necessary installation instructions.

(g) LEDs shall be arranged in no less than 5 equally loaded circuits.

(h) The LED signal shall operate with a minimum 0.90 power factor.

(i) Total harmonic distortion (current and voltage) induced into an AC power line by a signal module shall not exceed 20 percent.

(5) Environmental Requirements.

(a) The LED traffic signal lamp unit shall be rated for use in the ambient operating temperature range of -40 C to +74 C.

(b) (b) The unit shall be dust and moisture tight to protect all internal LED and electrical components.

(c) The unit shall consist of a housing that is a sealed watertight enclosure that eliminates dirt contamination and allows for safe handling in all weather conditions.

(6) Production Testing Requirements.

(a) Each new LED traffic signal lamp unit shall be energized for a minimum of 24 hours at operating voltage and at a temperature of +60 C in order to cause any electronic infant mortality to occur, and to ensure electronic component reliability prior to shipment.

(b) After the burn-in procedure is completed, each LED traffic signal lamp unit shall be tested by the manufacturer for rated initial intensity at rated operating voltage.

3. Documentation Requirements.

(1) Each LED traffic signal lamp unit shall be provided with the following documentation:

(a) Complete and accurate installation wiring guide.

(b) Contact name, address, telephone number for the representative, manufacturer, or distributor for warranty repair.

(2) The Contractor shall be required to submit a copy of the manufacturer's test report certified by an independent laboratory that the LED traffic signal lamp model submitted meets ITE Standards for light distribution, chromaticity, and power (consumption, power factor and harmonic distortion).

4. Warranty. The LED traffic signal lamp unit shall be warranted by the manufacturer against any failure due to workmanship or material defects within the first 60 months of purchase by Contractor. Repaired and replacement lamp units shall be warranted for the remainder of the original warranty period.

5. Measurement. This Item will be measured as each twelve (12) inch LED traffic signal lamp unit complete in place.

6. Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "12 INCH LED Traffic Signal Lamp Unit", of the color and type specified. This price shall be full compensation for furnishing, installing and testing units and for furnishing all other materials, labor, tools, equipment and incidentals necessary to complete the work.

SPECIAL SPECIFICATION

8288

Spread Spectrum Radio for Traffic Signals

1. **Description**. This Item shall govern for furnishing and installing spread spectrum radios for use with traffic control systems.

2. **Spread Spectrum Radio.** The Spread Spectrum Radio shall consist of furnishing and installing the Spread Spectrum Radio, drop cables, connectors, power supply and lightning surge protector complete in place as shown on the plans. In addition to FCC requirements, the spread spectrum radios shall have the following operating characteristics as a minimum:

FREQUENCY	902 - 928 MHz
RANGE	15 Miles or greater
REPEAT CAPABILITIES	1 repeater
POWER	1.0 Watt Transmitting Power
ENVIRONMENT	Temperature range minus 22 F to 140 F
FCC APPROVAL (Part 15)	No License Requirements
DATA CHARACTERISTICS	Half or Full Duplex Operation as required per traffic signal equipment manufacturer's recommendation RS232C interface DB-25 connector at both ends of the cable 1,200, 2,400, 4,800, 9,600 bps or greater

The radios shall be supplied with diagnostic software that shall be capable of testing the link between the master radio and the remote radios. The software shall be capable of detecting channels which are not adequate for the transmission of data and allow for the exclusion of these frequencies in the selection of frequencies to be scanned.

3. **Radio Antenna.** Radio antenna shall consist of furnishing spread spectrum radio antennas, drop cable, connectors and mounting hardware. This shall include all materials, labor and procedures required to completely install in place as shown on the plans.

Antenna, cable, and associated equipment shall be suitable for the location and the environmental conditions to be encountered and shall be selected to conform to the requirements of the transmitter and receiver.

The radio antenna(s) shall have the following characteristics as a minimum:

REMOTE SITE(S)	Unidirectional (Yagi) Mounted vertically polarized
MASTER SITE	Omni-directional
ANTENNA FREQUENCY	902-928 MHz
ANTENNA GAIN	MAX 6 dB gain (dB refenced to half wave dipole)
RANGE	15 Miles or greater
IMPEDANCE	MAX 50 ohm MEASUREMENT
WIND RATING	125 miles per hour
CONNECTORS	Type "N" Male solder-on connectors that match coaxial/heliax cable

The antenna shall be mounted on either a traffic signal pole, an illumination pole, or a separate steel pole as directed by the engineer. The antenna shall be grounded to the metal support; at no time shall a wood pole or support be used.

Complete manufacturer specifications shall be supplied for type of antenna. Specifications must include the exact gain for each antenna. Complete mounting hardware shall be included.

Antenna system shall be set up according to manufacturer's recommendations. Antenna system shall be set up so that service to the entire point-multipoint system is free of any pattern distortions.

4. Cable. Cable shall consist of furnishing and installing the cable for the feedline that connects the Spread Spectrum Radios to the Antennas complete in place as shown on the plans.

Each feedline (the cable that connects the transmitter/receiver to the antenna) shall be fitted with a connector, type "N" or better, and a coaxial protector (PolyPhaser IS-50NX-C2, Andrew APG-BNFNF- 090, Huber Suhner 3400-41-0048, or equivalent). The coaxial protector shall be mounted adjacent to and bonded to the cabinet ground bus.

Low loss cable shall be used for the feedline (LMR 400, Beldin 9913, or equivalent), and the cable type shall be selected to conform to the requirements of the transmitter and receiver and shall be suitable for the location and the environmental conditions to be encountered. Cable conductor and shield shall be copper only. Cable connectors shall be type N or better. Cable runs over 100 feet in length shall be heliax type cable.

Complete manufacturer specifications shall be supplied for the type of cable used. Specifications shall include the amount of loss produced by different lengths (in linear feet) of cable.

Installation of feedline connectors shall be in accordance with manufacturer's recommendations. Connectors that will be exposed to outdoor environments shall be weatherproofed according to manufacturer's recommendations.

5. Testing, Training, Documentation and Warranty. A test site survey shall be conducted by the Contractor at each location prior to the installation of the radios and antennas to verify the capability of operation of the equipment. The Department reserves the right to conduct their own site survey as needed.

The supplier of the spread spectrum radio system shall supervise the installation and testing of the equipment. A factory certified representative from the supplier shall be on-site during installation.

Up to two (2) days of training shall be provided to personnel of the Department in the operation, setup and maintenance of the spread spectrum radio system. Instruction and materials shall be provided for a maximum of 20 persons and shall be conducted at a location selected by the Department. The Department shall be responsible for any travel, room and board expenses for its own personnel.

Instruction personnel shall be certified by the equipment manufacturer. The User's Guide is not an adequate substitute for practical classroom training and formal certification by an approved agency.

All equipment shall have no less than 95 percent of the manufacturer's standard warranty remaining on the date that equipment invoices are submitted by the Contractor for payment. Any equipment with less than 95 percent of its warranty remaining will not be accepted by the Department.

Ongoing software support by the manufacturer shall include updates of the spread spectrum radio software. These updates shall be provided free of charge during the warranty period. The update of the software to be NTCIP (National Transportation Communication for Intelligent Transportation System Protocol) compliant shall be included.

The manufacturer shall maintain a program for technical support and software updates following expiration of the warranty period. This program shall be made available to the Department in the form of a separate agreement for continuing support.

6. Measurement. This Item will be measured by each spread spectrum radio, by each antenna and by the linear foot of cable complete in place.

7. Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Spread Spectrum Radio", "Antenna" of the types specified, "Coaxial Cable" and "Heliax Cable". These prices shall be full compensation for furnishing, assembling and installing the spread spectrum radios, antennas, and the cable; for all mounting attachments; for all labor, tools, equipment, testing procedures and incidentals necessary to complete the work.